

WHAT IS CLAIMED IS:

1 1. A planetary gear structure provided in a vehicle transmission
2 comprising:
3 a carrier possessing a plurality of circumferentially spaced apart
4 bores;
5 a plurality of pinion shafts each adapted to receive a pinion gear,
6 each of the pinion shafts being positioned in one of the bores in the carrier
7 so that the pinion shafts are circumferentially spaced apart from one
8 another; and
9 at least three stopper plates separate and spaced apart from one
10 another, each of the stopper plates being positioned between adjoining pairs
11 of the pinion shafts, each of the stopper plates engaging two different ones
12 of the pinion shafts to rotationally fix the pinion shafts against rotation
13 relative to the carrier.

1 2. The planetary gear structure according to Claim 1, further
2 comprising a slit provided in an outer surface of each of the pinion shafts,
3 each stopper plate engaging the slit in two different pinion shafts.

1 3. The planetary gear structure according to Claim 1, wherein the
2 stopper plates possesses oppositely positioned side portions which each
3 engage one of the pinion shafts.

1 4. A planetary gear structure comprising:
2 a carrier provided with a plurality of circumferentially spaced apart
3 bores;
4 a plurality of pinion shafts each adapted to receive a pinion gear,
5 each of the pinion shafts being positioned in one of the bores in the carrier
6 so that the pinion shafts are circumferentially spaced apart from one
7 another, each of the pinion shafts being provided with a slit; and
8 a plurality of separate stopper plates each arranged between
9 adjoining pairs of the pinion shafts and each engaging the slit in two of the
10 pinion shafts to fix the pinion shafts against rotation relative to the carrier.

1 5. The planetary gear structure according to Claim 4, wherein each
2 stopper plate has a pair of side portions extending in a radial direction of the
3 carrier, each of the side portions of each stopper plate engaging the slit in
4 one of the pinion shafts.

1 6. The planetary gear structure according to Claim 5, wherein each
2 stopper plate has an inner end portion and an outer end portion, the inner
3 end portion of each plate engaging an inner circumferential wall of the
4 carrier and the outer end portion of each stopper plate engaging an outer
5 circumferential wall of the carrier.

1 7. The planetary gear structure according to Claim 4, wherein each
2 pinion shaft is engaged by only a single one of the stopper plates.

1 8. The planetary gear structure according to Claim 4, wherein each
2 pinion shaft is engaged by two of the stopper plates.

1 9. The planetary gear structure according to Claim 4, wherein the
2 plurality of pinion shafts comprises more than three pinion shafts.

1 10. The planetary gear structure according to Claim 9, wherein the
2 plurality of stopper plates is no more than three stopper plates.

1 11. The planetary gear structure according to Claim 4, wherein the
2 plurality of pinion shafts is no more than three pinion shafts.

1 12. The planetary gear structure according to Claim 11, wherein the
2 plurality of stopper plates is no more than three stopper plates.

1 13. A planetary gear structure comprising:
2 a carrier having a cylindrical portion;
3 a plurality of pinion shafts mounted in the carrier along an axial
4 direction of the cylindrical portion; and
5 a stopper plate arranged between a pair of the pinion shafts so as to
6 fix each of the pinion shafts against revolution about its own respective axis.

1 14. The planetary gear structure according to Claim 13, wherein the
2 stopper plate has a pair of side portions, each of which extends along a
3 radial direction of the cylindrical portion and each of which engages one of
4 the pinion shafts.

1 15. The planetary gear structure according to Claim 14, wherein the
2 pinion shafts have a slit on an outer surface for receiving one of the side
3 portions of stopper plate.

1 16. The planetary gear structure according to Claim 15, wherein the
2 stopper plate has an inner end portion and an outer end portion, the inner

3 end portion of the stopper plate engaging an inner circumferential wall of the
4 carrier and the outer end portion engaging an outer circumferential wall of
5 the carrier.

1 17. The planetary gear structure according to Claim 13, further
2 comprising a plurality of stopper plates, each pinion shaft being engaged by
3 only a single one of the stopper plates.

1 18. The planetary gear structure according to Claim 13, further
2 comprising a plurality of stopper plates, each pinion shaft being engaged by
3 two of the stopper plates.

1 19. The planetary gear structure according to Claim 13, further
2 comprising a plurality of stopper plates, the plurality of pinion shafts
3 comprising more than three pinion shafts.

1 20. The planetary gear structure according to Claim 13, further
2 comprising a plurality of stopper plates, the plurality of pinion shafts being
3 no more than three pinion shafts.